CHAPTER 5
CONCLUSIONS

The yield of gelatin obtained from the skin of nile tilapia was 18.14% on wet weight basis. The extracted gelatin constituted 7.27% moisture content, 89.42% protein, 0.37% ash and trace amount of fat (0.28%). The gel strength and viscosity at 80 s^{-1} of 6.67% w/v gelatin from nile tilapia skin were 328.16 g and 17.79 cP, respectively. The amino acid composition and SDS-PAGE pattern of gelatin skin between nile tilapia and porcine were closely similar.

Gelatin nanofibers were electrospun in the single solvent (acetic acid or formic acid) system. In both solvents (acetic acid and formic acid) and 15% w/v gelatin concentration, the viscosity of gelatin solution increased and the conductivity decreased when solvent concentration increased. The average fiber diameter increased with increasing solvent concentration. 40% v/v acetic acid solvent gave continuous and smooth electrospun fibers with an average diameter of 233 nm. Continuous and smooth fibers with an average diameter of 137 nm were obtained when 80% formic acid concentration was used. In both solvents and varying gelatin concentrations, the viscosity and conductivity of gelatin solution as well as the average fiber diameter increased with increasing gelatin concentration. In 40% v/v acetic acid solvent, the gelatin concentration of 17, 20 and 23% w/v gave continuous and smooth electrospun fibers without beads with an average diameter between 208 nm and 316 nm. In 80% v/v formic acid solvent, the gelatin concentration of 20, 23 and 26% w/v gave continuous and smooth electrospun fibers without beads with an average diameter between 238 nm and 284 nm. The tensile strength and Young's modulus of the glutaraldehyde crosslinked gelatin nanofibers mats at all gelatin concentrations were higher than the non-crosslinked gelatin fiber mats. The elongation of both crosslinked and non-crosslinked gelatin nanofibers mats at all gelatin concentrations showed no significant differences ($P > 0.05$).